MRID No. 444577-29

DATA EVALUATION RECORD
§ 72-1 - ACUTE LC_{50} TEST WITH A WARMWATER FISH

1. **CHEMICAL:** Prohexadione Calcium — PC Code No.: 112600

2. **TEST MATERIAL:** BX-112 — Purity: 93.3%

3. **CITATION:**

Authors:	M.T. Douglas, R.W.S. Halls, I.A. Macdonald
Title:	The Acute Toxicity of BX-112 to the Bluegill Sunfish (*Lepomis macrochirus*)
Study Completion Date:	February 3, 1997
Laboratory:	Huntingdon Research Centre Ltd., Cambridgeshire, England
Sponsor:	BASF Corporation, Research Triangle Park, NC
Laboratory Report ID:	KCI 37(e)/90873
MRID No.:	444577-29
DP Barcode:	D245631

4. **REVIEWED BY:** Karl Bullock, M.S., Environmental Scientist, Golder Associates Inc.

Signature: Karl Bullock **Date:** 7/7/98

APPROVED BY: Pim Kosalwat, Ph.D., Senior Scientist, Golder Associates Inc.

Signature: P. Kosalwat **Date:** 7/7/98

5. **APPROVED BY:**

Signature: R. Montague **Date:** 11/18/98

6. **STUDY PARAMETERS:**

Age or Size of Test Organism:	2.8 cm
Definitive Test Duration:	96 hours
Study Method:	Static-renewal
Type of Concentrations:	Mean measured

7. **CONCLUSIONS:** This study is scientifically sound ~~and~~ but cannot meet Agency ~~fulfills the~~ guideline requirements for a core level 3 fish. The 96-hour LC_{50} was determined to be >100 ppm nominal or >95.6 ppm ai mean measured concentration, the only concentration tested. BX-112 is classified as practically non-toxic to the bluegill. The NOEC was determined to be 95.6 ppm ai.

BJM 12/2000

13. VERIFICATION OF STATISTICAL RESULTS:

Parameter	Result
Binomial Test LC_{50} (95% C.I.)	N/A
Moving Average Angle LC_{50} (95% C.I.)	N/A
Probit LC_{50} (95% C.I.)	N/A
Probit Slope	N/A
NOEC	95.6 ppm ai

14. REVIEWER'S COMMENTS: This study is scientifically sound and fulfills the guideline requirements for an acute toxicity test using bluegill sunfish. Although the test material was not tested up to 100 ppm ai, the reviewer does not believe that increasing the test concentration by 4.4 ppm ai would have changed the result of this study. The 96-hour LC_{50} was determined to be >100 ppm nominal (>95.6 ppm ai mean measured concentration), which classifies BX-112 as practically non-toxic to the bluegill. The NOEC was determined to be 95.6 ppm ai. This study is classified as ~~Core.~~ Supplemental

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Results Synopsis

LC_{50}: >95.6 ppm ai 95% C.I.: N/A

NOEC: 95.6 ppm ai Probit Slope: N/A

8. **ADEQUACY OF THE STUDY:**

   A. Classification: ~~core~~ Supplemental

   B. Rationale: Fulfills the guideline requirements.

   C. Repairability: N/A.

9. **GUIDELINE DEVIATIONS:**

   1. The acclimation period was 7 days; guidelines recommend a 14 day acclimation period.
   2. Dilution water was dechlorinated tap water.
   3. Hardness (350 mg/L as $CaCO_3$) and pH (8.4 - 8.5) exceeded guideline recommendations (hardness: 40 - 200 mg/L as $CaCO_3$; pH: 7.2 - 7.6).
   4. Temperature was not continuously measured.
   5. The test concentration was slightly less than the required 100 ppm ai.

10. **SUBMISSION PURPOSE:**

11. **MATERIALS AND METHODS:**

    A. Test Organisms

Guideline Criteria	Reported Information
Species Preferred species is the bluegill sunfish (*Lepomis macrochirus*)	*Lepomis macrochirus*
Mean Weight 0.1-5 g	0.44 ± 0.086 g
Mean Standard Length Longest not > 2x shortest	2.8 ± 0.2 cm
Supplier	S.P. Inc., Salem, MA

Guideline Criteria	Reported Information
All fish from same source?	Yes
All fish from the same year class?	Yes

B. Source/Acclimation

Guideline Criteria	Reported Information
Acclimation Period Minimum 14 days	7 days
Wild caught organisms were quarantined for 7 days?	N/A
Were there signs of disease or injury?	No
If treated for disease, was there no sign of the disease remaining during the 48 hours prior to testing?	N/A
Feeding No feeding during the study	No feeding during the test.
Pretest Mortality < 3% mortality 48 hours prior to testing	2% mortality in the 7 days prior to test initiation.

C. Test System

Guideline Criteria	Reported Information
Source of dilution water Soft reconstituted water or water from a natural source, not dechlorinated tap water	Dechlorinated tap water
Does water support test animals without observable signs of stress?	Yes
Water Temperature 17°C or 22°C	21°C
pH Prefer 7.2 to 7.6	8.4-8.5

Guideline Criteria	Reported Information
Dissolved Oxygen Static: ≥ 60% during 1st 48 hrs and ≥ 40% during 2nd 48 hrs, flow-through: ≥ 60%	≥96% of saturation during the test
Total Hardness Prefer 40 to 200 mg/L as $CaCO_3$	350 mg/L as $CaCO_3$
Test Aquaria 1. Material: Glass or stainless steel 2. Size: Volume of 18.9 L (5 gal) or 30 x 60 x 30 cm 3. Fill volume: 15-30 L of solution	 Glass Not reported 20 L
Type of Dilution System Must provide reproducible supply of toxicant	N/A
Flow Rate Consistent flow rate of 5-10 vol/24 hours, meter systems calibrated before study and checked twice daily during test period	Solutions were renewed daily
Biomass Loading Rate Static: ≤ 0.8 g/L at ≤ 17°C, ≤ 0.5 g/L at > 17°C; flow-through: ≤ 1 g/L/day	0.22 g/L
Photoperiod 16 hours light, 8 hours dark	16 h light, 8 h dark
Solvents Not to exceed 0.5 mL/L for static tests or 0.1 mL/L for flow-through tests	None

D. Test Design

Guideline Criteria	Reported Information
Range Finding Test If LC_{50} >100 mg/L with 30 fish, then no definitive test is required.	No range finding tests were conducted.
Nominal Concentrations of Definitive Test Control & 5 treatment levels; dosage should be 60% of the next highest concentration; concentrations should be in a geometric series	Negative control and 100 mg/L (93.3 mg ai/L).
Number of Test Organisms Minimum 10/level, may be divided among containers	10 fish per replicate; 2 replicates in the negative control (20 fish), 3 replicates of the treatment (30 fish).
Test organisms randomly or impartially assigned to test vessels?	Not reported
Biological observations made every 24 hours?	Yes
Water Parameter Measurements 1. Temperature Measured constantly or, if water baths are used, every 6 hrs, may not vary > 1°C 2. DO and pH Measured at beginning of test and ever 48 h in the high, medium, and low doses and in the control	Temperature, DO, and pH were measured at test initiation and daily thereafter until test termination in each replicate of the control and treatment.
Chemical Analysis Needed if solutions were aerated, if chemical was volatile, insoluble, or known to absorb, if precipitate formed, if containers were not steel or glass, or if flow-through system was used	Solutions collected from each replicate of the control and treatment at 0, 24, and 96 hours were analyzed by HPLC.

12. REPORTED RESULTS:

A. General Results

Guideline Criteria	Reported Information
Quality assurance and GLP compliance statements were included in the report?	Yes
Recovery of Chemical	98 - 106% of nominal
Control Mortality Not more than 10% control organisms may die or show abnormal behavior.	0% mortality in control groups
Raw data included?	Yes
Signs of toxicity (if any) were described?	No signs of test material toxicity were observed.

Mortality

Concentration (mg ai/L)		Number of Fish	Cumulative Number Dead			
Nominal	Mean Measured		Hour of Study			
			24	48	72	96
Negative Control	<0.25	20	0	0	0	0
93.3	95.6	30	0	0	0	0

Other Significant Results: No sublethal signs of toxicity were observed.

B. Statistical Results

Statistical method: Visual observation; results based on nominal concentrations

LC_{50}: >100 mg/L (>93.3 mg ai/L) 95% C.I.: N/A

NOEC: 100 mg/L (93.3 mg ai/L) Probit Slope: N/A